

September 5, 2003

Certified Mail: 9059 7332

Karl R. Koch  
Mechanical Engineer  
Jupiter Aluminum Corporation  
1745 – 165<sup>th</sup> Street  
Hammond, Indiana 46320

Re: 089-17411-00201 - Significant Source Modification to:  
Part 70 permit No.: T089-5838-00201

Dear Mr. Koch:

Jupiter Aluminum Corporation was issued Part 70 operating permit T089-5838-00201 on March 4, 1998 for Secondary Aluminum Processing. An application to modify the source was received on February 20, 2003. Pursuant to 326 IAC 2-7-10.5 the following existing emission unit is approved for modification at the source:

Addition of waste oil burning capability to Aluminum Reverberatory Furnace #4 and establishment of an overall waste oil usage limit for Furnaces #2, #4, and #6.

(11) Aluminum Reverberatory Furnace No. 4 (MS-1C) (Stack ID MS-1C)

This unit has a maximum design rate of 20 million Btu/hr heat input and is normally natural gas fired. The maximum rate of scrap aluminum feed to this furnace is 3.9 tons per hour with a 90% melt recovery rate (3.5 tons per hour). Emissions generated during the melting process are controlled by a Thermal Afterburner which is rated at 99% control efficiency. This unit can also burn waste oil as an alternate fuel at a rate of 15 million Btu/hr.

The following construction conditions are applicable to the proposed project:

General Construction Conditions

1. The data and information supplied with the application shall be considered part of this source modification approval. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Quality (OAQ).
2. This approval to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

Effective Date of the Permit

3. Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.
4. Pursuant to 326 IAC 2-1.1-9 and 326 IAC 2-7-10.5(i), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.
6. Pursuant to 326 IAC 2-7-10.5(l) the emission units constructed under this approval shall not be placed into operation prior to revision of the source's Part 70 Operating Permit to incorporate the required operation conditions.

The proposed operating conditions applicable to these emission units are attached to this Source Modification approval. These proposed operating conditions shall be incorporated into the Part 70 operating permit as a significant permit modification in accordance with 326 IAC 2-7-12. A revised Part 70 permit will be sent to you after a required 45-day EPA review.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter call (219) 853-6306 and ask for Ronald Holder.

Sincerely,

Ronald L. Novak, Director  
Hammond Department of Environmental Management  
Air Pollution Control Division

Attachments

RH

cc: Mindy Hahn, Permits Administration, IDEM-OAQ

## SECTION D.3 FACILITY OPERATION CONDITIONS

Three (3) Aluminum Reverberatory Furnaces No. 2, 6, and 7:

- (7) Aluminum Reverberatory Furnace No. 2 (MS-1A)  
This unit has a maximum design rate of 40 million Btu/hr heat input and is normally natural gas fired. The maximum rate of scrap aluminum feed to this furnace is 15 Tons per hour with a 95% melt recovery rate (14.25 Tons per hour). Particulate emissions generated during the melting process are primarily controlled by an American Air Filter Baghouse (BHS-7) which is rated at 99% control efficiency. This unit can also burn waste oil as an alternate fuel at a rate of 20 million Btu/hr.
- (8) Aluminum Reverberatory Furnace No. 6 (MS-1E)  
This unit has a maximum design rate of 40 million Btu/hr heat input and is normally natural gas fired. The maximum rate of scrap aluminum feed to this furnace is 15 Tons per hour with a 95% melt recovery rate (14.25 Tons per hour). Particulate emissions generated during the melting process are primarily controlled by a Wheelabrator Baghouse (BHS-6) which is rated at 99% control efficiency. This unit can also burn waste oil as an alternate fuel at a rate of 20 million Btu/hr.
- (9) Aluminum Reverberatory Furnace No. 7 (MS-1F)  
This unit has a maximum design rate of 6 million Btu/hr heat input and is natural gas fired only. The maximum rate of scrap aluminum feed to this furnace is 1.8 Tons per hour with a 90% melt recovery rate (1.62 Tons per hour). Particulate emissions generated during the melting process are primarily controlled by a Carborundum Baghouse (BHS-5) which is rated at 99% control efficiency.

Normally, furnace 2 is controlled by Baghouse BHS-7, furnace 6 is controlled by Baghouse BHS-6, and furnace 7 is controlled by Baghouse BHS-5. However, during maintenance or other circumstances as necessary, all three furnaces can be vented to either baghouse BHS-6 or BHS-7.

### Emission Limitations and Standards [326 IAC 2-7-5(1)]

#### D.3.1 Particulate Matter less than 10 microns in diameter (PM10)

Pursuant to 326 IAC 6-1-10.1(Lake County PM10 Emission Requirements), subsection (d), emissions of particulate matter less than ten microns in diameter (PM10) from Aluminum Reverberatory Furnaces No. 2 and 6 shall be limited as follows:

Unit ID:	PM10 Emissions Limit	
	(lbs/ton)	(lbs/hr)
Aluminum Reverberatory Furnace No. 2	0.130	1.137
Aluminum Reverberatory Furnace No. 6	0.060	0.970

#### D.3.2 Particulate Matter (PM)

Pursuant to the Hammond Air Quality Control Ordinance No. 3522 (as amended), the PM emissions limits from Aluminum Reverberatory Furnaces No. 2 and 6 shall be set equal to the PM10 emissions limits.

#### D.3.3 Particulate Matter less than 10 microns in diameter (PM10)

Pursuant to the Hammond Air Quality Control Ordinance No. 3522 (as amended) and Construction Permit No. 00568, the PM10 emissions limits from the Aluminum Reverberatory Furnace No. 7 shall be limited to 0.060 lbs/ton and 0.970 lbs/hr.

#### D.3.4 Particulate Matter (PM)

Pursuant to the Hammond Air Quality Control Ordinance No. 3522 (as amended) and Construction Permit No. 00568, the PM emissions limits from the Aluminum Reverberatory Furnace No. 7 shall be limited to 0.03 gr/dscf and 4.770 lbs/hr.

#### D.3.5 Emission Offset Minor Limit and Lake County Sulfur Dioxide Emission Limitations [326 IAC 2-3] [326 IAC 7-4-1.1]

- (a) Emission Offset Minor Limit [326 IAC 2-3]  
Furnaces #2 and #6 (with Furnace #4 in Section D.4) shall have a combined limit of 1,860,000 gallons of waste oil use per 12 consecutive month period. This usage limit is necessary to limit the potential to emit of SO<sub>2</sub> to less than forty (40) tons per twelve (12) consecutive month period. This limitation also limits the potential to emit of the other criteria pollutants such that the significant levels for Emission Offset applicability are not exceeded. Therefore, 326 IAC 2-3 (Emission Offset) requirements do not apply.
- (b) Lake County Sulfur Dioxide Emission Limitations [326 IAC 7-4-1.1]  
Pursuant to 326 IAC 7-4-1.1, sulfur dioxide emissions for Furnaces #2 and #6 shall be limited to three-tenths (0.3) pounds per million Btu (6.0 lbs/hr each). This limitation is equivalent to a sulfur content of four-tenths of a percent (0.4%).

#### D.3.6 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and their control equipment.

### Compliance Determination Requirements

#### D.3.7 Testing Requirements [326 IAC 2-7-6(1)]

A compliance stack test shall be performed to demonstrate compliance with the PM<sub>10</sub> limit for Furnaces #2 and #6 at the exhaust of the baghouse normally controlling that furnace. The initial test shall be performed using baghouse (BHS-6). Thereafter, the baghouses shall be alternated for each compliance test. Testing shall be completed within twenty-four (24) months of issuance of this permit and repeated no less than once every 5 years thereafter. Any furnace approved to combust an alternate fuel other than natural gas shall perform the compliance stack test using the approved alternate fuel. Testing shall be performed in accordance with 326 IAC 3-2.1 using methods acceptable to the Commissioner.

### Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

#### D.3.8 Particulate Matter (PM) and Particulate Matter less than 10 microns in diameter (PM10)

Pursuant to Hammond Air Quality Control Ordinance No. 3522 (as amended), either Baghouse (BHS-6) or (BHS-7) shall be in operation at all times when any one of the three furnaces are in operation.

#### D.3.9 Visible Emissions Notations

- (a) Daily visible emission notations of each Baghouse stack exhaust shall be performed during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down.

- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.

#### D.3.10 Parametric Monitoring

The Permittee shall record the total static pressure drop across each baghouse (BHS-5), (BHS-6), and (BHS-7) used in conjunction with these facilities when any one of the three furnaces are in operation when venting to the atmosphere. Unless operated under conditions for which the Compliance Response Plan specifies otherwise, the pressure drop across each baghouse shall be maintained within the range of **1.0 and 5.0** inches of water or a range established during the latest stack test. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the pressure reading is outside of the above-mentioned range for any one reading.

The instrument used for determining the pressure shall comply with Section C - Pressure Gauge Specifications, of this permit, shall be subject to approval by IDEM – OAM and HDEM and shall be calibrated at least once every six (6) months.

#### D.3.11 Baghouse Inspections

An inspection shall be performed each month of all bags in each baghouse that vents to the atmosphere. A baghouse inspection shall be performed within one month of redirecting vents to the atmosphere and every month thereafter. Inspections are optional when venting indoors. All defective bags shall be replaced.

#### D.3.12 Broken Bag or Failure Detection

In the event that bag failure has been observed:

- (a) The affected compartments shall be shut down immediately until the failed units have been repaired or replaced.
- (b) Within eight (8) hours of the determination of failure, response steps according to the timetable described in the Compliance Response Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Compliance Response Plan, response steps shall be devised within eight (8) hours of discovery of the failure and shall include a timetable for completion.

#### D.3.13 Waste Oil Restrictions

The waste oil burned in Furnaces #2 and #6 shall comply with the used oil requirements specified in 329 IAC 13 (Used Oil Management). Pursuant to 329 IAC 13-3-2 (Used Oil Specifications), used oil burned for energy recovery that is classified as off-specification used oil fuel shall comply with the provisions of 329 IAC 13-8 (Used Oil Burners Who Burn Off-specification Used Oil For Energy Recovery), including:

- (a) Receipt of an EPA identification number as outlined in 329 IAC 13-8-3 (Notification),
- (b) Compliance with the used oil storage requirements specified in 329 IAC 13-8-5 (Used Oil Storage), and
- (c) Maintaining records pursuant to 329 IAC 13-8-6 (Tracking).

## **Record Keeping and Reporting Requirement [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

### **D.3.14 Record Keeping Requirements**

- (a) To document compliance with Conditions D.3.5(a) and (b), the Permittee shall maintain records of the calendar month average sulfur content, heat content, fuel consumption, and sulfur dioxide emission rate in pounds per million Btu. These records shall be submitted to the IDEM-OAQ or HDEM upon request.
- (b) To document compliance with Condition D.3.9, the Permittee shall maintain records of daily visible emission notations of each baghouse stack exhaust.
- (c) To document compliance with Condition D.3.10 through D.3.12, the Permittee shall maintain the following:
  - (1) Daily records of the following operational parameters during normal operation when venting to the atmosphere:
    - (A) Inlet and outlet differential static pressure; and
    - (B) Cleaning cycle: frequency and differential pressure
  - (2) Documentation of all response steps implemented, per event.
  - (3) Operation and preventive maintenance logs, including work purchases orders, shall be maintained.
  - (4) Quality Assurance/Quality Control (QA/QC) procedures.
  - (5) Operator standard operating procedures (SOP).
  - (6) Manufacturer's specifications or its equivalent.
  - (7) Equipment "troubleshooting" contingency plan.
  - (8) Documentation of the dates vents are redirected.
- (d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

### **D.3.15 Reporting Requirements**

- (a) To document compliance with Conditions D.3.5(a) and (b), a quarterly summary of the quantity of waste oil burned and the calendar month average sulfur content shall be submitted to the addresses listed in Section C – General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (b) Documentation of compliance with Condition D.3.13 (Waste Oil Restrictions) shall be submitted to the addresses listed in Section C – General Reporting Requirements, of this permit, prior to the use of off-specification used oil for energy recovery.

## SECTION D.4 FACILITY OPERATION CONDITIONS

Three (3) Aluminum Reverberatory Furnaces No. 3, 4, and 5, each equipped with a thermal afterburner:

- (10) Aluminum Reverberatory Furnace No. 3 (MS-1B) (Stack ID MS-1B)  
This unit has a maximum design rate of 20 million Btu/hr heat input and is natural gas fired only. The maximum rate of scrap aluminum feed to this furnace is 3.9 Tons per hour with a 90% melt recovery rate (3.5 Tons per hour). Emissions generated during the melting process are controlled by a Thermal Afterburner which is rated at 99% control efficiency.
- (11) Aluminum Reverberatory Furnace No. 4 (MS-1C) (Stack ID MS-1C)  
This unit has a maximum design rate of 20 million Btu/hr heat input and is normally natural gas fired. The maximum rate of scrap aluminum feed to this furnace is 3.9 Tons per hour with a 90% melt recovery rate (3.5 Tons per hour). Emissions generated during the melting process are controlled by a Thermal Afterburner which is rated at 99% control efficiency. This unit can also burn waste oil as an alternate fuel at a rate of 15 million Btu/hr.
- (12) Aluminum Reverberatory Furnace No. 5 (MS-1D) (Stack ID MS-1D)  
This unit has a maximum design rate of 14 million Btu/hr heat input and is natural gas fired only. The maximum rate of scrap aluminum feed to this furnace is 3.3 Tons per hour with a 90% melt recovery rate (3.0 Tons per hour). Emissions generated during the melting process are controlled by a Thermal Afterburner which is rated at 99% control efficiency.

### Emission Limitations and Standards [326 IAC 2-7-5(1)]

#### D.4.1 Particulate Matter less than 10 microns in diameter (PM10)

Pursuant to 326 IAC 6-1-10.1(Lake County PM10 Emission Requirements), subsection (d), emissions of particulate matter less than ten microns in diameter (PM10) from these facilities shall be limited as follows:

Unit ID:	PM10 Emissions Limit	
	(lbs/ton)	(lbs/hr)
Aluminum Reverberatory Furnace No. 3	0.145	0.510
Aluminum Reverberatory Furnace No. 4	0.145	0.510
Aluminum Reverberatory Furnace No. 5	0.142	0.430

#### D.4.2 Particulate Matter (PM)

Pursuant to the Hammond Air Quality Control Ordinance No. 3522 (as amended), the PM emissions limits from these facilities shall be set equal to the PM10 emissions limits.

#### D.4.3 Emission Offset Minor Limit and Lake County Sulfur Dioxide Emission Limitations [326 IAC 2-3] [326 IAC 7-4-1.1]

- (a) Emission Offset Minor Limit [326 IAC 2-3]  
Furnace #4 (with Furnaces #2 and #6 in Section D.3) shall have a combined limit of 1,860,000 gallons of waste oil use per 12 consecutive month period. This usage limit is necessary to limit the potential to emit of SO<sub>2</sub> to less than forty (40) tons per twelve (12) consecutive month period. This limitation also limits the potential to emit of the other criteria pollutants such that the significant levels for Emission Offset applicability are not exceeded. Therefore, 326 IAC 2-3 (Emission Offset) requirements do not apply.
- (b) Lake County Sulfur Dioxide Emission Limitations [326 IAC 7-4-1.1]  
Pursuant to 326 IAC 7-4-1.1, sulfur dioxide emissions for Furnace #4 shall be limited to three-tenths (0.3) pounds per million Btu (4.5 lbs/hr). This limitation is equivalent to a sulfur content of four-tenths of a percent (0.4%).

#### D.4.4 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and its control equipment.

### Compliance Determination Requirements

#### D.4.5 Testing Requirements [326 IAC 2-7-6(1)]

A compliance stack test shall be performed on one of the three Aluminum Reverberatory Furnaces No. 3, 4, or 5 to demonstrate compliance with the PM10 limit. The furnace tested shall be alternated among the three furnaces. The test shall be completed within twenty-four (24) months of issuance of this permit and repeated no less than once every 5 years thereafter. Any furnace approved to combust an alternate fuel other than natural gas shall perform the compliance stack test using the approved alternate fuel. Testing shall be performed in accordance with 326 IAC 3-2.1 using methods acceptable to the Commissioner.

### Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

#### D.4.6 Particulate Matter (PM) and Particulate Matter less than 10 microns in diameter (PM10)

Pursuant to Hammond Air Quality Control Ordinance No. 3522 (as amended), each thermal afterburner shall be in operation at all times when its associated furnace is in operation.

#### D.4.7 Visible Emissions Notations

- (a) Daily visible emission notations of each furnace exhaust shall be performed during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.

#### D.4.8 Parametric Monitoring

The Permittee shall record the thermal afterburner operating temperature used in conjunction with each furnace when the furnace is in operation. Unless operated under conditions for which the Compliance Response Plan specifies otherwise, the temperature of the afterburner shall be maintained at or above 1600 °F or a minimum temperature established during the latest stack test. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the temperature is below the minimum value for any one reading.

The instrument used for determining the temperature shall be subject to approval by IDEM - OAM and HDEM and shall be calibrated at least once every six (6) months.



## **Record Keeping and Reporting Requirement [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

### **D.4.9 Record Keeping Requirements**

- (a) To document compliance with Conditions D.4.3(a) and (b), the Permittee shall maintain records of the calendar month average sulfur content, heat content, fuel consumption, and sulfur dioxide emission rate in pounds per million Btu. These records shall be submitted to the IDEM-OAQ or HDEM upon request.
- (b) To document compliance with Condition D.4.7, the Permittee shall maintain records of daily visible emission notations of each furnace stack exhaust.
- (c) To document compliance with Condition D.4.8, the Permittee shall maintain the following:
  - (1) Daily records of the thermal afterburner operating temperature during normal operation
  - (2) Documentation of all response steps implemented, per event .
  - (3) Operation and preventive maintenance logs, including work purchases orders, shall be maintained.
  - (4) Quality Assurance/Quality Control (QA/QC) procedures.
  - (5) Operator standard operating procedures (SOP).
  - (6) Manufacturer's specifications or its equivalent.
  - (7) Equipment "troubleshooting" contingency plan.
- (d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

### **D.4.10 Reporting Requirements**

To document compliance with Condition D.4.3(a) and (b), a quarterly summary of the quantity of waste oil burned and the calendar month average sulfur content shall be submitted to the addresses listed in Section C – General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and  
HAMMOND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
Part 70 Quarterly Report**

Source Name: Jupiter Aluminum Corporation  
Source Address: 1745 – 165<sup>th</sup> Street, Hammond, Indiana 46320  
Mailing Address: 1745 – 165<sup>th</sup> Street, Hammond, Indiana 46320  
Part 70 Permit No.: T089-5838-00201  
Facility: Aluminum Reverberatory Furnaces #2, #4, and #6  
Parameter: Waste Oil Usage and Sulfur Content  
Limit: Emission Offset Minor Limit and Sulfur Content Limit:  
Total waste oil usage shall not exceed 1,860,000 gallons per twelve (12) consecutive month period, rolled on a monthly basis. This limit is equivalent to a potential to emit less than forty (40) tons of SO<sub>2</sub> per year. Sulfur content shall not exceed four-tenths of a percent (0.4%). This limit is equivalent to three-tenths (0.3) pounds per million Btu for each furnace. [326 IAC 7-4-1.1]

QUARTER:

YEAR:

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1 Waste Oil Use Sulfur %			
Month 2 Waste Oil Use Sulfur %			
Month 3 Waste Oil Use Sulfur %			

Records of calendar month average sulfur content shall be available upon request. [326 IAC 7-2-1]

\_\_\_ No deviation occurred in this quarter.

\_\_\_ Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

**Indiana Department of Environmental Management  
Office of Air Quality**

**and**

**Hammond Department of Environmental Management**

Addendum to the  
Technical Support Documents for a Part 70  
Significant Source Modification & Significant Permit Modification

Source Name:	Jupiter Aluminum Corporation
Source Location:	1745 - 165 <sup>th</sup> Street, Hammond, IN 46320
County:	Lake
SIC Code:	3353 - Secondary Aluminum Processing
Operation Permit No.:	T089-5838-00201
Operation Permit Issuance Date:	March 4, 1998
Significant Source Modification No.:	089-17411-00201
Significant Permit Modification No.:	089-17445-00201
Permit Reviewer:	Ronald Holder

On May 28, 2003, the Hammond Department of Environmental Management (HDEM) had a notice published in the Hammond Times, Hammond, Indiana, stating that Jupiter Aluminum Corporation had applied for a Significant Source Modification and Significant Permit Modification to their Part 70 Permit issued on March 4, 1998. The modification allowed for the use of waste oil as an alternate fuel on Aluminum Furnace #4 and increased a previous limitation of sulfur dioxide (SO<sub>2</sub>) emissions. The notice also stated that HDEM proposed to issue the modification approval and permit modification for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

Comments were received from Stephen Loeschner on June 27, 2003. In the following comments and responses "17411" refers to the modification approval and "17445" refers to the permit modification. In the responses, additions to the permit are bolded for emphasis; the language with a line through it has been deleted.

**Comment 1:                   Improbable oil or numeric pandering**

At 17445 Condition D.3.5(b) and elsewhere, DEM states:

"Pursuant to 326 IAC 7-4-1.1, sulfur dioxide emissions...shall be limited to 0.3 pounds per million Btu. This limitation is equivalent to a [fuel] sulfur content of 0.4% [by weight]."

As those are written as single digit significance, perhaps DEM meant that 0.34999 (which rounds to 0.3) pounds per million Btu is equivalent to a fuel sulfur content of 0.35000% (which rounds to 0.4) by weight for fuel with 20,001 Btu per pound rather than the 26,667 Btu per pound that results from applying the calculation to a "0.30000 pounds SO<sub>2</sub> per million Btu is equivalent to a fuel sulfur content of 0.4000% by weight" factor pair. To implement that numeric skullduggery, as DEM proposes, would mock the 326 IAC 7-4-1.1(a) "0.3 pounds SO<sub>2</sub> per million Btu" limit by giving Jupiter at least a 48% emission bonus. Yet, on the p. 53 "Part 70 Quarterly Report" form, DEM states:

"[Fuel total] sulfur content shall not exceed 0.4% [by weight]. This limit is equivalent to 0.3 pounds [of SO<sub>2</sub> emission] per million Btu[.]"

And there can be no doubt that Jupiter will interpret that as a license to use fuel oil having an average total sulfur of 0.4% by weight or, indeed an average of as much as 0.44999%.

That rather unusual (and likely expensive!) 26,667 Btus per pound fuel is in contrast to the 17445 Technical Support Document ("TSD") Appendix A p. 1 fuel that DEM states has 142,762 Btu per gallon and the (same) fuel DEM states weighs 7.88 pounds per gallon, for those characteristics combine to 18,117 Btu per pound. On that same page, DEM states:

"Source [fuel] will be limited to 0.4% sulfur content to meet 0.3 lbs/MmBtu[.]" [sic]

I guess declaring that 26,667 equals 18,117 on the same Appendix A page is just one of the ways that DEM makes Indiana a cleaner, healthier place to live. This is clear error and a 40 CFR 70.7(f)(1)(iii), IC 13-15-7-2(3)(A), "material mistake".

### Response to Comment 1:

The single digit significance is irrelevant as regards a number that is a limit. The definition of a limit is "a boundary, especially one that cannot or should not be exceeded. A limit is also defined as a maximum amount, or the largest quantity that is allowed. As stated in 326 IAC 7-4-1.1, sulfur dioxide emissions are "limited to three-tenths (0.3) pounds per million Btu if the fuel combustion unit has a maximum capacity of less than twenty (20) million Btu per hour actual heat input". Sulfur dioxide emissions of 0.30001 pounds per million Btu is an exceedance of that limit and is a violation of the rule.

Rules do not allow the DEM to issue a permit that does not assure compliance with all applicable air pollution control rules. Therefore, the reviewer of the permit is obliged to use the maximum rate of an emission unit when determining the potential emissions and emission limit of an emission unit. Therefore the maximum pounds of sulfur dioxide (SO<sub>2</sub>) emitted per mmBtu are based on the maximum design rate (maximum heat input rate) of the unit. This unit has a maximum heat input rate (burning waste oil) of 15 mmBtu. This emission rate is also determined by the highest actual or limited sulfur content of the waste oil being burned. Therefore;

The maximum allowable emission rate based on the rule and the maximum heat input rate is:

$$(0.3 \text{ lbs SO}_2 \text{ per mmBtu}) \times (15 \text{ mmBtu/hr}) = \underline{4.5 \text{ lbs SO}_2 \text{ per hour.}}$$

The accepted EPA and AP 42 emission factor for SO<sub>2</sub> is 107S pounds per 1000 gallons (mgal) of waste oil burned by air-atomized burner, where S is the percent sulfur (S), therefore, the emission factor for SO<sub>2</sub> at a maximum (limit) of 0.4% sulfur is:

$$(107 \text{ lbs SO}_2 \text{ per mgal}) \times (0.4) = \underline{42.8 \text{ lbs SO}_2 \text{ per mgal burned.}}$$

The Btu value of the waste oil is 142,726 Btu/gal. This information is required by the permit reviewer to be submitted to the Department on a certificate of analysis from the supplier of the waste oil or by an independent lab. Jupiter supplied this information in a certificate of analysis from their supplier. This Btu value is consistent with the EPA accepted AP 42 Btu values for fuel and waste oils. Therefore, the maximum rate of input in thousands of gallons of waste oil is:

$$(15 \text{ mmBtu/hr}) \div (142,726 \text{ Btu/gal}) = 0.00010509 \text{ mmgal/hr or } \underline{0.105 \text{ mgal/hr.}}$$

The above emission factor based on a maximum sulfur content of 0.4% is 42.8 lbs SO<sub>2</sub> per mgal burned. Therefore, the maximum rate of fuel combustion times the maximum emission factor is:

$$(0.105 \text{ mgal/hr}) \times (42.8 \text{ lbs SO}_2 \text{ per mgal burned}) = \underline{4.494 \text{ lbs SO}_2 \text{ per hour.}}$$

This number meets the above maximum allowable emission rate of 4.5 lbs SO<sub>2</sub> per hour. Therefore, if the waste oil does not exceed 0.4% sulfur by weight, the sulfur dioxide (SO<sub>2</sub>) emissions will not exceed the rule limit of three-tenths (0.3) pounds per million Btu (mmBtu).

For that reason, a limitation of 0.4% sulfur content by weight is equivalent to the limitation of 0.3 pounds per million Btu and easier to verify on a continual basis. Compliance with the limitation can be and is verified on a continual basis by the record keeping and reporting requirements in the permit. An exceedance of the limitation of 0.4% sulfur content by any amount is an exceedance of the limitation and a violation of the rule and the permitted limitation.

#### **Comment 2: Unaccounted sulfur**

Other than 5838 Condition C.7, a rather bland stack height statement, 5838 seems devoid of mention of SO<sub>2</sub> or sulfur, yet the 17411 and 17445 TSDs' source status tables show a (calendar year presumed) 2001 SO<sub>2</sub> emission of 195.52 tons. Detail why there is no accounting in the series of Jupiter permits and drafts for the sulfur content of the (waste, scrap, used, etc.) aluminum, both as far as content and in re the portion of content believed converted into an airborne SO<sub>2</sub> emission. Detail why there is no accounting in the permit for the sulfur in the Jupiter "natural gas." Is or is not the fuel gas supplied to Jupiter required by 49 CFR 192.625 to have the § 192.625 minimum odor? If it is not required, does or does not that gas have that minimum odor? Was Jupiter permitted to burn oil of any description prior to January 2002? Detail all of Jupiter's oil burning from 1 January 1998 through 31 March 2003. And detail each calendar year 2001 A.2 item Jupiter SO<sub>2</sub> measured and estimated contribution, such that they sum to 195.52.

Why, pray tell, was calendar year 2002 SO<sub>2</sub> emission data not supplied? Furnish it as comment response, and detail each calendar year 2002 A.2 item Jupiter SO<sub>2</sub> measured and estimated contribution, such that they sum to it.

#### **Response to Comment 2:**

Jupiter's annual emissions statements and emissions calculations for aluminum furnaces have three (3) emission factors for SO<sub>2</sub> based on tons of metal produced, combustion of natural gas, and combustion of waste oil. The source status tables in the TSDs show the potential emissions of SO<sub>2</sub> for the entire source in order to establish that they are or are not a major source of SO<sub>2</sub> for the purpose the Emissions Offset rule. This information is available in the emissions calculations for their Part 70 permit (T089-5838-00201) and their actual annual emissions are available in their required annual emission statement.

There are emission factors for SO<sub>2</sub> based on the combustion of natural gas. These emissions are accounted for every time there is a new source of (or increase of) the combustion of natural gas. The supplier of natural gas is required by law to add a chemical to natural gas such that it has an odor and is detectable. This is a safety concern (detection of leaks) and is added to the gas prior to use by anyone. Neither the IDEM nor Jupiter has control over the amount of that additive. SO<sub>2</sub> emissions depend on the sulfur content of the natural gas. SO<sub>2</sub> emissions due to this additive are negligible.

Jupiter was not permitted to burn oil of any description prior to January, 2002. Jupiter's combustion of waste oil is reported monthly to the IDEM and HDEM pursuant to conditions of their Part 70 permit and is reported annually in their annual emission statement. The annual (actual) emissions do not sum up to 195.92 TPY. These are the potential SO<sub>2</sub> emissions source-wide and are available to anyone in the calculations portion of Jupiter's Part 70 permit T089-5838-00201.

Calendar year 2002 annual emission statement was not available during the review of this modification. There would have been an increase of potential SO<sub>2</sub> emissions source wide and actual emissions due to the issuance of the modification allowing waste oil use in furnaces #2 and #6. Those potential increases were accounted for in this modification for the purposes of the Emission Offset rule – see TSD, page 4.

**Comment 3:                    Federally enforceability of synthetic minor sulfur status**

The form on p. 53 of 17411 and 17445 in no way serves to show that the SO<sub>2</sub> emissions from oil combustion would be less than 40 tons per year ("tpy"). It is a total mockery of "federally enforceable" to suggest that there is any paper report showing a confirmation of conditions imposed so as to create a synthetic minor status. Jupiter would be free to have oil sulfur analyses average to 0.44999% to round them to 0.4%, to place that on the form, and to have oil usage amounts totaling 1,860,000 gallons per any consecutive 12 months on the form. Such would allow a 65.9+ tpy SO<sub>2</sub> emission. This is clear error. As remedy, the permitted 12-month oil use must be reduced to 1,128,000 gallons.

**Response to Comment 3:**

The accepted EPA and AP 42 emission factor for SO<sub>2</sub> is 107S pounds per 1000 gallons (mgal) of waste oil burned by air-atomized burner, where S is the percent sulfur (S), therefore, the emission factor for SO<sub>2</sub> at a maximum (limit) of 0.4% sulfur is:

$$(107 \text{ lbs SO}_2 \text{ per mgal}) \times (0.4) = \underline{42.8 \text{ lbs SO}_2 \text{ per mgal burned.}}$$

The reporting form on page 53 of the permit is intended to assure that the SO<sub>2</sub> emissions per twelve (12) consecutive month period, rolled on a monthly basis does not exceed forty (40) tons. This is the most practical and accurate way of making the source accountable because the maximum annual SO<sub>2</sub> emissions are dependent on the maximum (limited) sulfur content and the total maximum (limited) number of gallons.

$$(42.8 \text{ lbs SO}_2 \text{ per mgal burned}) \times (1,860 \text{ mgal}) \div (2000 \text{ lbs/ton}) = \underline{39.8 \text{ TPY}}$$

This is the maximum allowable increase of SO<sub>2</sub> emissions that would not trigger applicability to the Emission Offset rule 326 IAC 2-3.

**Comment 4:                    Waste oil v. used oil**

It would appear that 329 IAC 13 does not contain the phrase "waste oil". Describe in great detail why that phrase is in the many Jupiter documents. It should be removed from 17411 and 17445 prior to issuance, as it only creates confusion.

**Response to Comment 4:**

Used oil is defined in 329 IAC 13-2-19 as follows:

Sec. 19. "Used oil" means:

- (1) any oil that has been refined from crude oil; or
- (2) any synthetic oil; that has been used and as a result of such use is contaminated by physical or chemical impurities.

Both TSDs for 17411 and 17445 state:

Pursuant to 329 IAC 13-3-2 (Used Oil Specifications), the used oil to be burned for energy recovery in Furnaces #2, #4, and #6 has been shown not to exceed the specifications in Table 1 of 329 IAC 13-3-2, and is therefore not subject to this article. This has been shown according to 329 IAC 13-9-3, 13-9-4, and 13-9-5(b), a submittal of a certificate of analysis documenting that the used oil meets the specifications.

For the purposes of this review the "waste oil" to be combusted at Jupiter Aluminum meets the standards in 329 IAC 13-3-2 and meets the definition of "used oil" in Section 19 of that rule.

**Comment 5: Distillate Oil**

Per 326 IAC 7-4-1.1(a), Jupiter may only combust *distillate oil*. It appears that nowhere in the 17411 and 17445 53-page draft permit is there any text obligation that the liquid fuel be distillate oil, and that nowhere is there any compulsion for Jupiter to certify that liquid fuel be distillate oil. Omission of this restriction from the permit text and failure to require certification that the liquid fuel is distillate oil is clear error. While 326 IAC 1, 2, and 7 seem to have no distillate oil definition, its definition in 40 CFR 60.41b should reasonable apply. The permit texts must be amended to read: "distillate oil in accordance with 40 CFR 60.41b" and suitable certification must be added to the quarterly liquid fuel report.

While some non-distillate oils may be compliant with 329 IAC 13-3-2 and 329 IAC 13-8- those oils cannot be lawfully burned by Jupiter in Lake County. Until Jupiter certifies that it physically has (and has contracts to purchase) only distillate oil compliant with 40 CFR 60.41b, DEM should command Jupiter to cease all oil burning. I request that DEM inspect Jupiter's physical oil, oil handling, and oil records promptly and apply an enforcement action if there is evidence of use by Jupiter of oils that do not meet the 40 CFR 60.41b distillate oil definition.

**Response to Comment 5:**

Jupiter has made application to the IDEM to burn waste "used" oil as an alternate fuel. They did not apply for approval to burn distillate oil. They are not currently approved to burn distillate oil. Distillate oil has a higher sulfur content and higher emission factor and would have required more severe limitations. Approval to burn distillate oil would require a completely new and separate application and review. The waste oil does, however, meet the definition in 40 CFR 60.41b in that it complies with the specifications for fuel oil numbers 1 and 2, as defined by the American Society of Testing and Materials in ASTM D396-78, Standard Specifications for Fuel Oils and, thus allows the IDEM to use the Lake County sulfur dioxide emission limitations in 326 IAC 7-4-1.1.

**Comment 6: Unaccounted mixed nitrogen oxides**

¶ 1 5838 seems devoid of mention of mixed nitrogen oxides expressed as nitrogen dioxide equivalent ("NOx"), yet the 17411 and 17445 TSDs' source status tables show a 2001 (calendar year presumed) NOx emission of 228.97 tons. Detail why there is no accounting in the series of Jupiter permits and drafts for the NOx emissions – how they got to exceed a potential to emit of ("PTE") of 100 tons per year ("tpy") and what their present PTE is now. And detail each calendar year 2001 A.2 item Jupiter NOx measured and estimated contribution, such that they sum to 228.97.

¶ 2 Why, pray tell, was calendar year 2002 NOx emission data not supplied? Furnish it as comment response, and detail each calendar 2002 A.2 item Jupiter NOx measured and estimated contribution, such that they sum to it.

¶ 3 A summation of the Btu per hour capacities listed in 17411 and 17445 A.2 (1) through (13) is a mere 0.224 billion Btu per hour. With 228.97 tpy NOx, that is an astounding high rate of 233 pounds NOx per billion Btu *if all* of the equipment operated for 8768 hours – which is rather unlikely. Lesser operation would result in the rate rising *above* 233. Cite the total billions of Btu Jupiter used in calendar years 2001 and 2002. What is the fuel rate capacity of the A.2 (10) through (12) thermal oxidizers, and why are they not listed in the permit?

¶ 4 In IDEM document permit package 089-12401-00201, beginning with the cover letter first numeric list of points that start at 6 rather than 1, and in several subsequent parts, the use of 100% oxygen for the fuel combustion process is touted as a NOx elimination scheme for reverberatory furnace 2. Appendix A to the 17411 and 17455 TSD's mention it for reverberatory furnaces 2, 4, and 6 – assigning a 1 pound NOx per million (standard presumed) cubic foot of natural gas (roughly 0.98 pound NOx per billion Btu) factor – yet there seems no appearance in any of the permit areas any obligation that that technology be used. Why is there no such obligation? Those same TSD pages also cite a 112 pound NOx per billion

Btu rate with oil. How many tons of "100% oxygen" did Jupiter use for fuel combustion in calendar years 2001 and 2002, and what was the maximum percentage of things other than oxygen that were permitted in the "100% oxygen"?

¶ 5 Obviously with rates of 0.98 and 112 contributing to an average of 233+, some much larger rates are involved. As response to comment, produce a NOx spreadsheet that gives every PTE and limited PTE for every emission unit, including the A.2 (10) through (12) thermal after burners, for every fuel. Absent clear definition, the LPTE's had best exceed 228.97.

¶ 6 112 pounds NOx per billion Btu seems an astounding low oil rate when considered in concert with the 14.7 pounds carbon monoxide ("CO") per billion Btu rate with oil. It is extremely improbable that oil is burned at such low temperatures as to produce that low NOx rate without having incomplete combustion leading to a higher CO rate. Is something with more oxygen in it being used rather than ambient air for partial oil combustion? Is it being required?

¶ 7 Detail all test results performed on Jupiter equipment from June 1998 to the present including all CO, NOx, and filterable and condensable particulate matter having an aerodynamic diameter of no more than 10 microns ("PM10") and the filterable PM.

¶ 8 Identify the date of construction authorization and the date of construction completion for each 17411 and 17445 A.2 item.

¶ 9 Using those 26 dates, explain how Jupiter is alleged to have never been a major NOx source and how it comes to enjoy dumping 228.97 tpy (a ground level ozone precursor) into the air of Lake County, which is in severe non-attainment of the national ambient air quality standard.

¶ 10 Using those 26 dates, explain how Jupiter is alleged to have never been a major SO<sub>2</sub> source and how it comes to enjoy dumping 195.52 tpy SO<sub>2</sub> into the air of Lake County, which is in severe non-attainment of the national ambient air quality standard.

¶ 11 Electronically publish *all* Jupiter permit document packages, for which IDEM has electronic documents, at: <http://www.epa.gov/ARD-R5/permits/inonline.htm>. As a minimum, 089-11098-00201 and 089-11158-00201 appear absent.

¶ 12 For 5838, and all subsequent document packages, furnish the names of those who made comments (if any) on the drafts.

¶ 13 There appears no mention of hydrogen chloride ("HCl") in the Jupiter documents. Is the HCl LPTE greater than 10 tpy? Why is it not mentioned? Does Jupiter use a chemical flux? What is its most dominant by mass element? What is the identity of and emission of the most dominant by mass Jupiter emission on the 42 USC 7412(b)(1) list other than lead compounds?

#### **Response to Comment 6:**

¶ 1 Jupiter's annual emissions statements and emissions calculations for aluminum furnaces have three (3) emission factors for NOx based on tons of metal produced, combustion of natural gas, and combustion of waste oil. The source status tables in the TSDs show the potential emissions of NOx for the entire source in order to establish that they are or are not a major source of NOx for the purpose the Emissions Offset rule. This information is available in the emissions calculations for their Part 70 permit (T089-5838-00201). They had a potential to emit greater than 100 tpy at the time of their Part 70 application review.

¶ 2 Calendar year 2002 annual emission statement was not available during the review of this modification. A detail of NOx emissions contributions per item is available in their Part 70 review calculations and in their 2001 and 2002 emission statements available at the IDEM and HDEM.



¶ 3 Besides combustion of natural gas, there is a sizeable emission factor for NO<sub>x</sub> associated with “tons of metal produced”. This has contributed to a high potential to emit for NO<sub>x</sub> for these furnaces. Jupiter provides total “max tons of metal produced per hour” and “mmcf of gas consumption per hour” (maximum rates) per furnace. These numbers contribute to the high PTE and are far greater than the actual emissions submitted on an annual basis.

There is not a fuel rate capacity for the “California afterburners” used in Furnaces 3, 4, and 5. These “afterburners” are composed of a plenum chamber followed by a 30’ refractory lined stack designed to control the minimum velocity and retention time of the gas stream. At temperatures of 1400 to 1600 degrees Fahrenheit, the fumes are self-ignited to cause an afterburn effect.

¶ 4 Jupiter uses 100% oxygen (from their on site oxygen plant) for combustion in their furnaces for the purposes of attaining 100% complete combustion, thus saving money on fuel use. Greater than 99% of NO<sub>x</sub> emissions are due to the existing nitrogen in normal combustion air. Natural gas contains a negligible amount of nitrogen. The use of 100% oxygen virtually eliminates NO<sub>x</sub> emissions from the combustion of natural gas. A factor of 1 pound NO<sub>x</sub> per mmcf of natural gas is used because zero “0” is unacceptable. There are no NO<sub>x</sub> limitations for these furnaces. The oxygen is not used to meet a standard or limitation. The oxygen supplementation is, therefore not required. Disclosure of the quantity of oxygen is not required.

¶ 5 Emissions calculations for aluminum furnaces have three (3) emission factors for NO<sub>x</sub> based on tons of metal produced, combustion of natural gas, and combustion of waste oil. The source status tables in the TSDs show the potential emissions of NO<sub>x</sub> for the entire source in order to establish that they are or are not a major source of NO<sub>x</sub> for the purpose the Emissions Offset rule. Item by item potential and actual NO<sub>x</sub> information is available in the emissions calculations for their Part 70 permit (T089-5838-00201) and in their annual emission statement.

¶ 6 Carbon from the components of oils (hydrocarbons) is available for the production of CO during the combustion. Nitrogen, on the other hand must be obtained from combustion air (ambient air).

¶ 7 Jupiter has stack tested the following items with the following results:

10/05/00	Furnace #3 using NG	PM10 (326 IAC 6-1-10.1(d)	in compliance
11/29/00	Furnace #2 using NG	PM10 (326 IAC 6-1-10.1(d)	in compliance
02/22/01	Furnace #6 using NG	PM10 (326 IAC 6-1-10.1(d)	in compliance
03/05/02	Furnace #6 using waste oil	PM10 (326 IAC 6-1-10.1(d)	in compliance

¶ 8 17411 is the approval to modify the burner for Furnace #4 to burn waste oil and 17445 is the approval to operate (permit modification). Neither authorization, to construct or operate, has been granted pending this response to public comment.

¶ 9 Jupiter has always been a major source of NO<sub>x</sub> since before their Part 70 application. They were addressed as a major source, hence the Part 70 permit requirement. The 228.97 tpy is the potential to emit regarding all maximum rates of all emission units at Jupiter Aluminum.

¶ 10 Jupiter has always been a major source of SO<sub>2</sub> since before their Part 70 application. They were addressed as a major source, hence the Part 70 permit requirement. The 195.52 tpy is the potential to emit regarding all maximum rates of all emission units at Jupiter Aluminum.

¶ 11 All Jupiter permit document packages, for which IDEM has electronic documents, have been electronically uploaded to the EPA site. 089-11098-00201 and 089-11158-00201, which were completed around the time that procedure began (electronic as opposed to hardcopy), have been located and electronically uploaded.

¶ 12 There were no comments received for any of the above mentioned previous document packages that required 30-day public notice.

¶ 13 Jupiter does not currently use Chlorine nor do they plan to use Chlorine. There is no HCl PTE or LPTE. Jupiter uses a chemical salt mixture for flux material. The two (2) most dominant elements by mass of this salt mixture are sodium chloride (salt) 47.5% and potassium chloride (salt) 47.5%.

**Indiana Department of Environmental Management  
Office of Air Quality**

and

**Hammond Department of Environmental Management  
Air Pollution Control Division**

Technical Support Document (TSD) for a Part 70  
Significant Source Modification & Significant Permit Modification

**Source Background and Description**

Source Name:	Jupiter Aluminum Corporation
Source Location:	1745 - 165 <sup>th</sup> Street, Hammond, IN 46320
County:	Lake
SIC Code:	3353 - Secondary Aluminum Processing
Operation Permit No.:	T089-5838-00201
Operation Permit Issuance Date:	March 4, 1998
Significant Source Modification No.:	089-17411-00201
Significant Permit Modification No.:	089-17445-00201
Permit Reviewer:	Ronald Holder

The Office of Air Quality (OAQ) has reviewed an application from Jupiter Aluminum Corporation requesting to modify the existing #4 Furnace Combustion System in order to alternate between Natural Gas and Waste Oil. The unit description would be modified as follows. **Bold** indicates the words that were added and ~~strike-outs~~ indicate the words that were removed:

(11) Aluminum Reverberatory Furnace No. 4 (MS-1C) (Stack ID MS-1C)

This unit has a maximum design rate of 20 million Btu/hr heat input and is **normally** natural gas fired ~~only~~. The maximum rate of scrap aluminum feed to this furnace is 3.9 Tons per hour with a 90% melt recovery rate (3.5 Tons per hour). Emissions generated during the melting process are controlled by a Thermal Afterburner which is rated at 99% control efficiency. **This unit can also burn waste oil as an alternate fuel at a rate of 15 million Btu/hr.**

Addition of the waste oil burning capability to the above unit does not change the scrap aluminum feed rate or melt recovery rate of the furnace. The combustion system is being modified to defray the high cost of natural gas during times of high demand such as colder weather. This modification also establishes an overall waste oil usage limit for Furnaces #2, #4, and #6.

**History**

On February 20, 2003, Jupiter Aluminum submitted an application to the HDEM requesting to modify the combustion system of existing Aluminum Reverberatory Furnaces #4 in order to use waste oil as an alternate fuel. Jupiter Aluminum was issued a Part 70 permit on March 4, 1998.

**Enforcement Issues**

The source has the following enforcement actions pending:

Notice of Violation and Agreed Order; Case # 2002 – 12472 - A.

Because of discrepancies found during routine inspections on 10/01/02 and 07/11/02 and failure to meet some Part 70 record keeping and reporting requirements; the following permit violations are currently being pursued by the IDEM:

Condition B.11	failure to report deviations on ACC,
Condition C.21	failure to keep records,
Condition C.17	failure to take response steps,
Condition C.22	failure to report deviations on quarterly,
Conditions D.3.14, D.2.5, and D.4.8	failure to take VENs,
Condition D.3.10	failure to take pressure drop readings, and
Condition D.4.7	failure to record afterburner temp on Furnace #4.

Notices of Violations and Agreed Orders are being prepared by IDEM, OE at this time.

**Stack Summary      The stack information for this existing unit does not change.**

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
MS-1C	Furnace #4	42'	4.3	13,915	1600

**Recommendation**

The staff recommends to the Commissioner that a Part 70 Significant Source Modification and Significant Permit Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on February 20, 2003. Additional information was received on April 17, 2003.

**Emission Calculations**

See Appendix A of this document for detailed emissions calculations (two (2) pages).

**Potential To Emit of Modification**

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA."

\*This table reflects the PTE before controls except for PM and PM10 (PTE after controls). Control equipment (baghouse) is considered federally enforceable because it has been required in a federally enforceable permit (Existing Part 70 permit T089-5838-00201).

Pollutant	Potential To Emit (tons/year)
PM	*0.593
PM-10	*0.529
SO <sub>2</sub>	19.70
VOC	0.46
CO	0.97
NO <sub>x</sub>	7.36
HAP (Pb)	0.09

Potential before control for Furnace #4 burning waste oil at 8760 hrs/yr.

### Justification for Modification

The Part 70 Operating permit is being modified through a Part 70 Significant Source Modification and Significant Permit Modification. The significant source modification is being performed pursuant to 326 IAC 2-7-10.5(f)(4)(B): any modification that would have a potential to emit greater than or equal to twenty-five (25) tons per year of Sulfur Dioxide (SO<sub>2</sub>). This modification relaxes a previous limitation of twenty-five (25) tons per year of Sulfur Dioxide (SO<sub>2</sub>) and sets a new Emission Offset limitation of forty (40) tons per year of SO<sub>2</sub>. The significant permit modification is being performed pursuant to 326 IAC 2-7-12(b)(1)(B) because it does involve significant changes to existing monitoring, reporting, or record keeping in the Part 70 permit and because it relaxes a previous limitation.

### County Attainment Status

This source is located in Lake County. 40 CFR 81.315 – (Indiana) – eCFR

Pollutant	Status
PM-10	Moderate Nonattainment
SO <sub>2</sub>	Primary Nonattainment
NO <sub>2</sub>	Unclassifiable/Attainment
Ozone	Severe Nonattainment
CO	Unclassifiable/Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC are considered when evaluating the rule applicability relating to the ozone standards. Lake County has been designated as severe non-attainment for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
- (b) Lake County has been classified as primary non-attainment for sulfur dioxide (SO<sub>2</sub>) and moderate nonattainment for particulates less than ten (10) microns in diameter (PM<sub>10</sub>). Therefore, these emissions were also reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
- (c) Lake County has been classified as attainment for oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO), and Lead (Pb). Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

### Source Status

Existing Source PSD or Emissions Offset Definition (potential emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	20.42
PM-10	13.05
SO <sub>2</sub>	195.52
VOC	34.01
CO	23.13
NO <sub>x</sub>	228.97
HAP (Lead)	0.02

Based on 2001 Emissions Statement submitted by Jupiter

- (a) This existing source is a major stationary source **(for the purposes of PSD)** because an attainment regulated pollutant **(oxides of nitrogen, NO<sub>x</sub>)** is emitted at a rate of 100 tons per year or more, and it is one of the 28 listed source categories **(326 IAC 2-2-1(y)(1)(T))**.
- (b) This existing source is a major stationary source **(for the purposes of Emission Offset)** because it has a potential to emit twenty-five (25) tons per year or more of volatile organic compounds (VOC) in a severe ozone nonattainment area (Lake County) **(326 IAC 2-3-1 (t)(2))**.

### Potential to Emit of Modification After Issuance

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Part 70 source modification.

This Emission Offset limit for SO<sub>2</sub> is based on limiting the overall increase of SO<sub>2</sub> to less than forty (40) tons per year (this includes a previous modification that was within a five-year contemporaneous period). This limitation is based on 1,860,000 gallons of waste oil use for any consecutive twelve (12) month period at a maximum sulfur content of 0.4%. See Appendix A of this document for detailed emissions calculations (two (2) pages).

Process/facility	Potential to Emit (tons/year)						
	PM	PM-10	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAP(Pb)
Modification 089-15025-00201							
9/3/01 to add waste oil use							
To Furnaces #2 and #6	0.64	0.57	21.40	0.50	1.05	8.00	0.006
Current modification to add	<b>0.59</b>	<b>0.53</b>	<b>19.70</b>	<b>0.46</b>	<b>0.97</b>	<b>7.36</b>	<b>0.005</b>
waste oil use Furnace #4							
Contemporaneous Total	1.23	1.10	41.10	0.96	2.02	15.36	0.011
Total Emission Offset Limit							
PTE based on 1,860,000							
Gallons of waste oil per year	<b>1.20</b>	<b>1.07</b>	<b>39.80</b>	<b>0.93</b>	<b>1.95</b>	<b>14.88</b>	<b>0.010</b>
PSD and Emission Offset Significant Levels	<b>25</b>	<b>15</b>	<b>40</b>	<b>40</b>	<b>100</b>	<b>40</b>	<b>0.6</b>

PM and PM<sub>10</sub> are the potentials after control. Existing federally enforceable limits for PM<sub>10</sub> in the existing Part 70 permit require a baghouse that also limits the PM.

This modification to an existing major stationary source is not a major modification for PSD because the net emission increases of pollutants for which Lake County is Attainment (PM<sub>10</sub>, NO<sub>x</sub>, CO, and Lead) are each less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.

This modification to an existing major stationary source is not a major modification for Emission Offset because the limited potential to emit of sulfur dioxide (SO<sub>2</sub>), for which Lake County is Primary Nonattainment, is less than the Emission Offset significant level. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

This limitation also ensures that the potential to emit of the other regulated pollutants are below their respective PSD and Emission Offset significant levels.

Compliance with the Emission Offset limit will require record keeping and reporting.

### **Federal Rule Applicability**

- (a) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) applicable to this source. This is not a Primary Aluminum Reduction Plant; Subpart S does not apply.
- (b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14 and 40 CFR Part 63) applicable to this source. This is not a Primary Aluminum Reduction Plant; Subpart LL does not apply.

### **State Rule Applicability - Individual Facilities**

#### 326 IAC 2-2 Prevention of Significant Deterioration (PSD) Requirements

This modification to an existing major stationary source did not result in an increase of emissions above the PSD significant levels for any pollutant for which Lake County is in Attainment. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.

#### 326 IAC 2-3 Emission Offset (Minor Limit)

This modification to an existing major stationary source will not result in an increase of emissions above the Emission Offset significant level for sulfur dioxide (SO<sub>2</sub>) for which Lake County is Primary Nonattainment because the waste oil use (for Furnaces #2, #4, and #6 combined) will be limited to 1,860,000 gallons per 12 consecutive month period at a maximum sulfur content of 0.4% which is equivalent to 39.8 tons per year of SO<sub>2</sub> emissions. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

This limitation will also ensure that the potential to emit of the other regulated pollutants will remain below their respective PSD and Emission Offset significant levels.

#### 326 IAC 6-1-10.1(d) (Lake County PM-10 Emissions Requirements)

Pursuant to 326 IAC 6-1-10.1(d), (Lake County PM<sub>10</sub> Emissions Requirements), Aluminum Reverb Furnace #4, has a specific PM<sub>10</sub> emission limit of 0.51 lbs/hr.

Compliance Determination Requirements in the existing Part 70 permit require that the Furnaces with afterburners (#3, #4, and #5) be alternately tested for compliance with their respective PM<sub>10</sub> limitations (one test per five (5) year permit term). Presuming that waste oil would be the worst case fuel (burn less clean than natural gas) for particulate emissions, Furnace #4 will be required to burn waste oil during its compliance test.

Furnace #3 was successfully tested burning natural gas on October 5, 2000.  
Furnace #6 was successfully tested burning waste oil on March 5, 2002.

Compliance Monitoring Requirements in the existing Part 70 permit require the respective afterburners to be in operation at all times when Furnaces #3, #4, or #5 are in operation.

#### 326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations)

A previous modification (in September 2001) to allow waste oil use in Furnaces #2 and #6 was limited to less than twenty-five (25) tons per year of SO<sub>2</sub> emissions. 326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations) did not apply at that time. The relaxation of this limitation due to the modification to allow waste oil use for Furnace #4 now makes this rule effective. Therefore, 326 IAC 7-1.1 will now apply to Furnaces #2, #6, and #4, including the following compliance methods (sampling, analysis, record keeping, and reporting) of 326 IAC 7-2 and the Sulfur Dioxide limitations for Lake County 326 IAC 7-4-1.1:

#### 326 IAC 7-2-1 (Reporting requirements; methods to determine compliance)

Owners or operators of sources or facilities subject to 326 IAC 7-1.1 or 7-4 and less than 100 MMBtu/hr shall submit to the commissioner reports of calendar month average sulfur content, heat content, fuel consumption, and sulfur dioxide emission rate in lbs/MMBtu upon request.

Fuel sampling and analysis data shall be collected pursuant to the procedures specified in 326 IAC 3-7-4 and these data may be used to determine compliance or noncompliance with the emissions limitations contained in 326 IAC 7-4.

**326 IAC 7-4-1.1 (Lake County Sulfur Dioxide Emission Limitations)**

A facility subject to 326 IAC 7-1.1, but not located at a source specifically listed in 326 IAC 7-4-1.1 may burn distillate oil with sulfur dioxide emissions limited to 0.3 lbs/MMBtu if the unit has a maximum capacity less than twenty (20) MMBtu/hr actual heat input. The sulfur content of the waste oil used for Furnaces #2, #4, and #6 shall be limited to 0.4 percent to meet this limitation and shall be demonstrated on a monthly basis according to the reporting required in 326 IAC 7-2.

**329 IAC 13 (Used Oil Management)**

Pursuant to 329 IAC 13-3-2 (Used Oil Specifications), the used oil to be burned for energy recovery in Furnaces #2, #4, and #6 has been shown not to exceed the specifications in Table 1 of 329 IAC 13-3-2, and is therefore not subject to this article. This has been shown according to 329 IAC 13-9-3, 13-9-4, and 13-9-5(b), a submittal of a certificate of analysis documenting that the used oil meets the specifications.

**Compliance Requirements**

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance determination and compliance monitoring requirements applicable to existing Furnaces #4 are added or modified as follows:

**Compliance Determination Requirements**

Testing Requirements [326 IAC 2-7-6(1)]

A compliance stack test shall be performed on one of the three Aluminum Reverberatory Furnaces No. 3, 4, or 5 to demonstrate compliance with the PM<sub>10</sub> limit. The furnace tested shall be alternated among the three furnaces. The test shall be completed within twenty-four (24) months of issuance of this permit and repeated no less than once every 5 years thereafter. Any furnace approved to combust an alternate fuel other than natural gas shall perform the compliance stack test using the approved alternate fuel. Testing shall be performed in accordance with 326 IAC 3-2.1 using methods acceptable to the Commissioner.

**Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]**

Particulate Matter (PM) and Particulate Matter less than 10 microns in diameter (PM<sub>10</sub>)



In order to comply with the 326 6-1-10.1 (Lake County PM-10 Emissions Requirements), Compliance Monitoring Requirements in the existing Part 70 permit require the respective afterburners to be in operation at all times when Furnaces #3, #4, or #5 are in operation.

#### Visible Emissions Notations

- (a) Daily visible emission notations of each furnace exhaust shall be performed during normal daylight operations. A trained employee shall record whether emissions are normal or abnormal.
- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.

#### Parametric Monitoring

The Permittee shall record the thermal afterburner operating temperature used in conjunction with each furnace when the furnace is in operation. Unless operated under conditions for which the Compliance Response Plan specifies otherwise, the temperature of the afterburner shall be maintained at or above 1600 °F or a minimum temperature established during the latest stack test. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the temperature is below the minimum value for any one reading.

The instrument used for determining the temperature shall be subject to approval by IDEM, OAQ or HDEM and shall be calibrated at least once every six (6) months.

#### Waste Oil Restrictions

The waste oil burned in Furnaces #2, #4, and #6 shall comply with the used oil requirements specified in 329 IAC 13 (Used Oil Management). Pursuant to 329 IAC 13-3-2 (Used Oil Specifications) used oil burned for energy recovery that is classified as off-specification used oil fuel shall comply with the provisions of 329 IAC 13-8 (Used Oil Burners Who Burn Off-specification Used Oil For Energy Recovery), including:

- (a) Receipt of an EPA identification number as outlined in 329 IAC 13-8-3 (Notification),
- (b) Compliance with the used oil storage requirements specified in 329 IAC 13-8-5 (Used Oil Storage), and
- (c) Maintaining records pursuant to 329 IAC 13-8-6 (Tracking).

### **Record Keeping and Reporting Requirement [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

#### Record Keeping Requirements

- (a) To demonstrate compliance with the visible emissions notations requirement, the Permittee shall maintain records of daily visible emission notations for each furnace stack exhaust.
- (b) To document compliance with the Parametric Monitoring condition, the Permittee shall maintain the following:

- (1) Daily records of the thermal afterburner operating temperature during normal operation.
  - (2) Documentation of all response steps implemented, per event.
  - (3) Operation and preventive maintenance logs, including work purchases orders, shall be maintained.
  - (4) Quality Assurance/Quality Control (QA/QC) procedures.
  - (5) Operator standard operating procedures (SOP).
  - (6) Manufacturer's specifications or its equivalent.
  - (7) Equipment "troubleshooting" contingency plan.
- (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### Reporting Requirements

To demonstrate compliance with reporting requirements of 326 IAC 7-2-1 and the sulfur dioxide emissions limitations of 326 IAC 7-4-1.1, the Permittee shall submit reports of calendar month average sulfur content, heat content, fuel consumption, and sulfur dioxide emission rate in pounds per million Btus upon request.

Fuel sampling and analysis data shall be collected pursuant to the procedures specified in 326 IAC 3-7-4 for oil combustion, and these data may be used to determine compliance or noncompliance with the emission limitations contained in 326 IAC 7-1.1 or 326 IAC 7-4-1.1. The permittee may rely upon equivalent sampling and analysis procedures performed by the vendor prior to delivery of the fuel oil (vendor certificate of analysis).

To demonstrate compliance with the Emission Offset Minor limit of 1,860,000 gallons per 12 consecutive month period, the Permittee shall submit a quarterly summary of the quantity of waste oil burned each month and the total waste oil burned for the previous 12 consecutive months.

The report shall be submitted to the addresses listed in Section C – General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

#### Source Modification 089-17411-00201

**Permit Modification 089-17445-00201** (Pages affected: 1, 4, 5, 7, 34-39, and 53)

The following changes were made to the Jupiter Aluminum Part 70 Permit T089-5838-00201. **Bold** indicates the items that were added and ~~strikeouts~~ indicate the items that were removed:

1. The cover page (page 1) was modified to add the issuance dates and IDEM tracking numbers for this source modification, permit modification, and to show the affected pages.
2. On page 4 of 53, in the Table of Contents, Condition D.3.5, Sulfur Dioxide (SO<sub>2</sub>) was changed as follows to combine the Emission Offset Minor Limit and the Sulfur Dioxide emission limitations into one related condition for Furnaces #2 and #6.

~~D.3.5 Sulfur Dioxide (SO<sub>2</sub>)~~

**D.3.5 Emission Offset and Sulfur Dioxide Limitations [326 IAC 2-3] [326 IAC 7-4-1.1]**

3. On page 4 of 53, in the Table of Contents, Condition D.4.3 was added as follows to duplicate the above condition for Furnace #4. The other conditions in Section D.4, including the previous D.4.3 "Preventive Maintenance Plan" were renumbered accordingly.

~~D.4.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]~~

**D.4.3 Emission Offset and Sulfur Dioxide Limitations [326 IAC 2-3] [326 IAC 7-4-1.1]**

4. On page 5 of 53, information was shifted due to the addition of conditions on page 4.
5. On page 7 of 53, in Section A, Source Summary, A.2, Emission Units and Pollution Control Equipment Summary, Unit (11), Furnace #4 was modified as follows:

(11) Aluminum Reverberatory Furnace No. 4 (MS-1C) (Stack ID MS-1C)

This unit has a maximum design rate of 20 million Btu/hr heat input and is **normally** natural gas fired ~~only~~. The maximum rate of scrap aluminum feed to this furnace is 3.9 Tons per hour with a 90% melt recovery rate (3.5 Tons per hour). Emissions generated during the melting process are controlled by a Thermal Afterburner which is rated at 99% control efficiency. **This unit can also burn waste oil as an alternate fuel at a rate of 15 million Btu/hr.**

6. On page 34 of 53, Condition D.3.5 Sulfur Dioxide (SO<sub>2</sub>) was modified as follows to combine the Emission Offset Minor Limit and the Sulfur Dioxide emission limitations into one related condition for Furnaces #2 and #6.

~~**Emission Offset and Sulfur Dioxide (SO<sub>2</sub>) Minor Limit [326 IAC 2-3] [326 IAC 7-4-1.1]**~~

**D.3.5 Emission Offset Minor Limit and Lake County Sulfur Dioxide Emission Limitations [326 IAC 2-3] [326 IAC 7-4-1.1]**

~~D.3.5 Sulfur Dioxide (SO<sub>2</sub>)~~

~~Furnaces #2 and #6 shall have a combined limit of one million (1,000,000) gallons of waste oil use per 12 consecutive month period. This usage limit is required to limit the potential to emit of SO<sub>2</sub> to less than twenty-five (25) tons per twelve (12) consecutive month period. Compliance with this limit makes 326 IAC 7-4-1.1 (Lake County sulfur dioxide emission limitations) not applicable. This limitation also limits the potential to emit of the other criteria pollutants such that the significant levels for Emission Offset are not exceeded. Therefore, 326 IAC 2-3 (Emission Offset) does not apply.~~

**(a) Emission Offset Minor Limit [326 IAC 2-3]**

Furnaces #2 and #6 (with Furnace #4 in Section D.4) shall have a combined limit of 1,860,000 gallons of waste oil use per 12 consecutive month period. This usage limit is necessary to limit the potential to emit of SO<sub>2</sub> to less than forty (40) tons per twelve (12) consecutive month period. This limitation also limits the potential to emit of the other criteria pollutants such that the significant levels for Emission Offset applicability are not exceeded. Therefore, 326 IAC 2-3 (Emission Offset) requirements do not apply.

**(b) Lake County Sulfur Dioxide Emission Limitations [326 IAC 7-4-1.1]**

Pursuant to 326 IAC 7-4-1.1, sulfur dioxide emissions for Furnaces #2 and #6 shall be limited to three-tenths (0.3) pounds per million Btu (6.0 lbs/hr) each. This limitation is equivalent to a sulfur content of four-tenths of a percent (0.4%).

7. On page 34 of 53, Condition 3.7, Testing Requirements, is modified as follows to ensure that waste oil (the most probable worst case) is used as a fuel during compliance testing and to remove Furnace #7 from the testing requirements because the compliance efforts here should concentrate on the two larger units that burn waste oil as a fuel and have PM<sub>10</sub> SIP limits. Furnace #7 burns natural gas and is nearly one-tenth the size of Furnace #2 or #6.

D.3.7 Testing Requirements [326 IAC 2-7-6(1)]

A compliance stack test shall be performed to demonstrate compliance with the PM<sub>10</sub> limit for ~~each of the furnaces (2, 6, and 7)~~ **Furnaces #2 and #6** at the exhaust of the baghouse normally controlling that furnace. The initial test shall be performed using baghouse (BHS-6). Thereafter, the baghouses shall be alternated for each compliance test. Testing shall be completed within twenty-four (24) months of issuance of this permit and repeated no less than once every 5 years thereafter. ~~Testing shall also be performed to demonstrate compliance with the PM<sub>10</sub> limit while burning waste oil prior to the initial use of waste oil as an alternate fuel in either Furnace #2 or #6.~~ **Any furnace approved to combust an alternate fuel other than natural gas shall perform the compliance stack test using the approved alternate fuel.** Testing shall be performed in accordance with 326 IAC 3-2.1 using methods acceptable to the Commissioner.

8. On page 35 of 53, information was shifted due to the addition of conditions on page 34.
9. On page 36 of 53, Record Keeping Requirements, D.3.14(a), was modified as follows to document compliance with Conditions D.3.5 (a) and (b) and 326 IAC 7-2-1 and 326 IAC 7-4-1.1:

D.3.14 Record Keeping Requirements

- (a) To document compliance with Conditions **D.3.5(a) and (b)**, the Permittee shall maintain records of ~~the quantity in gallons of waste oil burned each month.~~ **calendar month average sulfur content, heat content, fuel consumption, and sulfur dioxide emission rate in pounds per million Btus. These records shall be submitted to the IDEM-OAQ or HDEM upon request.**

10. On page 36 of 53, Reporting Requirement D.3.15(a) was modified as follows to document compliance with the Emission Offset Minor Limit in Condition D.3.5(a) and the sulfur content limitation in Condition D.3.5(b):

D.3.15 Reporting Requirements

**To document compliance with Condition D.3.5(a) and (b),** ~~A~~ a quarterly summary of the quantity of waste oil burned **and the calendar month average sulfur content** ~~to document compliance with Condition D.3.5~~ shall be submitted to the addresses listed in Section C – General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

11. On page 37 of 53, in Section D.4, the facility description box was modified as follows to reflect the description change for Emission Unit (11), Aluminum Reverberatory Furnace #4:

(11) Aluminum Reverberatory Furnace No. 4 (MS-1C) (Stack ID MS-1C)

This unit has a maximum design rate of 20 million Btu/hr heat input and is **normally** natural gas fired ~~only~~. The maximum rate of scrap aluminum feed to this furnace is 3.9 Tons per hour with a 90% melt recovery rate (3.5 Tons per hour). Emissions generated during the melting process are controlled by a Thermal Afterburner which is rated at 99% control efficiency. **This unit can also burn waste oil as an alternate fuel at a rate of 15 million Btu/hr.**

12. On page 37 of 53, Condition D.4.3 was added as follows to include and combine the related Emission Offset and Sulfur Dioxide Limitations for Furnace #4. The other conditions in Section D.4, including the previous D.4.3 “Preventive Maintenance Plan” were renumbered accordingly.

**D.4.3 Emission Offset Minor Limit and Lake County Sulfur Dioxide Emission Limitations [326 IAC 2-3] [326 IAC 7-4-1.1]**

- (a) Emission Offset Minor Limit [326 IAC 2-3]

**Furnace #4 (with Furnaces #2 and #6 in Section D.3) shall have a combined limit of 1,860,000 gallons of waste oil use per 12 consecutive month period. This usage limit is necessary to limit the potential to emit of SO<sub>2</sub> to less than forty (40) tons per twelve (12) consecutive month period. This limitation also limits the potential to emit of the other criteria pollutants such that the significant levels for Emission Offset applicability are not exceeded. Therefore, 326 IAC 2-3 (Emission Offset) requirements do not apply.**

**(b) Lake County Sulfur Dioxide Emission Limitations [326 IAC 7-4-1.1]**

**Pursuant to 326 IAC 7-4-1.1, sulfur dioxide emissions for Furnace #4 shall be limited to three-tenths (0.3) pounds per million Btu (4.5 lbs/hr). This limitation is equivalent to a sulfur content of four-tenths of a percent (0.4%).**

13. On page 37 of 53, Condition 4.4, Testing Requirements was modified as follows to ensure that waste oil (the most probable worst case) is used as a fuel during compliance testing.

~~D.4.4~~ **D.4.5** Testing Requirements [326 IAC 2-7-6(1)]

A compliance stack test shall be performed on one of the three Aluminum Reverberatory Furnaces No. 3, 4, or 5 to demonstrate compliance with the PM<sub>10</sub> limit. The furnace tested shall be alternated among the three furnaces. The test shall be completed within twenty-four (24) months of issuance of this permit and repeated no less than once every 5 years thereafter. **Any furnace approved to combust an alternate fuel other than natural gas shall perform the compliance stack test using the approved alternate fuel.** Testing shall be performed in accordance with 326 IAC 3-2.1 using methods acceptable to the Commissioner.

14. On page 39 of 53, Record Keeping Requirements, D.4.9(a) was added as follows to document compliance with Conditions D.4.3(a) and (b) and 326 IAC 7-2-1 and 326 IAC 7-4-1.1. The other record keeping requirements were renumbered accordingly.

~~D.4.8~~ **D.4.9** Record Keeping Requirements

- (a) **To document compliance with Conditions D.4.3(a) and (b), the Permittee shall maintain records of the calendar month average sulfur content, heat content, fuel consumption, and sulfur dioxide emission rate in pounds per million Btus. These records shall be submitted to the IDEM-OAQ or HDEM upon request.**

15. On page 39 of 53, Reporting Requirements, D.4.9 was modified as follows to document compliance with the Emission Offset Minor Limit in Condition D.4.3(a) and the sulfur content limitation in Condition D.4.3(b):

~~D.4.9~~ **D.4.10** Reporting Requirements

~~There are no reporting requirements for this facility.~~

**To document compliance with Condition D.4.3(a) and (b), a quarterly summary of the quantity of waste oil burned and the calendar month average sulfur content shall be submitted to the addresses listed in Section C – General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).**

16. Page 53 of 53 is the Waste Oil Reporting Form. This form is modified as follows to allow the Permittee to comply with reporting requirements in Conditions D.3.15 and D.4.10 for the Emission Offset Minor Limit and Sulfur Dioxide Emission Limits for Furnaces #2, #4, and #6.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and  
HAMMOND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

**Part 70 Quarterly Report**

Source Name: Jupiter Aluminum Corporation  
Source Address: 1745 – 165<sup>th</sup> Street, Hammond, Indiana 46320  
Mailing Address: 1745 – 165<sup>th</sup> Street, Hammond, Indiana 46320  
Part 70 Permit No.: T089-5838-00201  
Facility: Aluminum Reverberatory Furnaces #2, #4, and #6  
Parameter: Waste Oil Usage **and Sulfur Content**  
Limit: ~~Synthetic Emission Offset Minor Limitation of Waste Oil Use Usage for SO<sub>2</sub> emissions~~ **and Sulfur Content Limit.**  
Total waste oil usage shall not exceed ~~one million (1,000,000)~~ **1,860,000** gallons per twelve (12) consecutive month period, rolled on a monthly basis. This limit is equivalent to a potential to emit ~~twenty-five (25)~~ **less than forty (40)** tons of SO<sub>2</sub> per year. **Sulfur content shall not exceed four-tenths of a percent (0.4%). This limit is equivalent to three-tenths (0.3) pounds per million Btu for each furnace.**

QUARTER:

YEAR:

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1 <b>Waste Oil Use</b> <b>Sulfur %</b>			
Month 2 <b>Waste Oil Use</b> <b>Sulfur %</b>			
Month 3 <b>Waste Oil Use</b> <b>Sulfur %</b>			

**Documentation for calendar month average sulfur content shall be available upon request 326 IAC 7-2-1.**

\_\_\_ No deviation occurred in this quarter.

\_\_\_ Deviation/s occurred in this quarter.  
Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

## **Conclusion**

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Significant Source Modification **089-17411-00201** or Significant Permit Modification **089-17445-00201**.

## EMISSIONS CALCULATIONS

## Appendix A - Calculations

Page 1

**Jupiter Aluminum Corporation**  
1745 - 165th Street  
Hammond, Indiana 46320

PLANT ID NO: T089-5838-00201  
INSP DATE: 7/11/02  
CALC DATE: 3/25/03

Review for Furnace #4 - Waste Oil Use

Source Modification - 089-17411-00201

Permit Modification - 089-17445-00201

CALCULATIONS BY: Ronald Holder

YEAR OF DATA: **review**

\*\*NOTES\*\*

EF: EMISSION FACTOR

MDR: MAXIMUM DESIGN RATE

Ts: STACK DISCHARGE TEMPERATURE

CE: CONTROL EFFICIENCY

MDC: MAXIMUM DESIGN CAPACITY

UNITS FOR EMISSIONS ARE IN (TPY) EXCEPT WHERE GIVEN

## Waste Oil Use

**Reverb Furnace #4**  
(Natural Gas Combustion)  
CNTRL DEV: afterburner

MDC (mmBtu/hr): 20

HEAT CONTENT (Btu/cft): 1000

MDR (mmcft/hr): 0.020

QTY BURNED (mmcft/yr): N/A

**Original limit for Furnaces #2 and #6**  
**was 1,000,000 gallons to avoid applicability**  
**to 326 7-1.1-1, 25 TPY SO<sub>2</sub>. (see page 2)**

This was a comfortable limit assuming the source would not need to use that much. However, the energy savings has been considerable and the source would like to modify Furnace #4 to use waste oil. They understand that record keeping and analysis will be required per 326 7-2-1 and that %S will be limited to meet the emissions limitations of 326 IAC 7-4-1.1 (0.3 lbs/MMBtu).

**The new limit of 40 TPY SO<sub>2</sub> will avoid applicability to 326 IAC 2-3, Emission Offset**

SCC NO. 1-02-006-02			PERMITTED OPERATING HRS: <b>8760</b> hr/yr					
			POTENTIAL EMISSIONS					
			BEFORE CONTROL			AFTER CONTROL		
POLLUTANT	EF(lbs/mmcf)	CE (%)	(lbs/hr)	(lbs/day)	(TPY)	(lbs/hr)	(TPY)	(gr/dscf)
PM	3	0.95	0.060	1.440	<b>0.263</b>	0.003	<b>0.013</b>	N/A
PM10	3	0.95	0.060	1.440	<b>0.263</b>	0.003	<b>0.013</b>	N/A
SOx	0.6	0	0.012	0.288	<b>0.053</b>	0.012	<b>0.053</b>	N/A
NOx	1	0	0.020	0.480	<b>0.088</b>	0.020	<b>0.088</b>	N/A
VOC	5.8	0	0.116	2.784	<b>0.508</b>	0.116	<b>0.508</b>	N/A
CO	20	0	0.400	9.600	<b>1.752</b>	0.400	<b>1.752</b>	N/A
LEAD	0.0005	0.95	0.000	0.000	<b>0.000</b>	0.000	<b>0.000</b>	N/A

NOx emissions negligible because of 100% oxygen supplementation.

**Reverb Furnace #4**  
(Waste Oil Combustion)  
CNTRL DEV: afterburner

MDC (mmBtu/hr): 15

HEAT CONTENT (Btu/gal): 142,762

MDR (mgal/hr): 0.105

ASH CONTENT (%): 0.403

QTY BURNED (mgal/yr): **1860**SULFUR CONTENT (%): **0.400**

\*\*\*

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waste oil air-atomized burner SCC NO. 1-05-001-13			PERMITTED OPERATING HRS: <b>8760</b> hr/yr					
			POTENTIAL EMISSIONS					
			BEFORE CONTROLS			AFTER CONTROL		
POLLUTANT	EF(lbs/mgal)	CE (%)	(lbs/hr)	(lbs/day)	(TPY)	(lbs/hr)	(TPY)	(gr/dscf)
PM *	25.8	0.95	2.710	65.039	<b>11.870</b>	0.135	<b>0.593</b>	N/A
PM10 *	23.0	0.95	2.414	57.925	<b>10.571</b>	0.121	<b>0.529</b>	N/A
SOx *	42.8	0	4.497	107.928	<b>19.697</b>	<b>4.497</b>	<b>19.697</b>	N/A
NOx	16	0	1.681	40.347	<b>7.363</b>	1.681	<b>7.363</b>	N/A
VOC	1	0	0.105	2.522	<b>0.460</b>	0.105	<b>0.460</b>	N/A
CO	2.1	0	0.221	5.296	<b>0.966</b>	0.221	<b>0.966</b>	N/A
LEAD **	0.205	0.95	0.022	0.517	<b>0.094</b>	0.001	<b>0.005</b>	N/A

total combined  
emission offset  
limit for Furnaces  
#2, #4, & #6

PM	
PM10	
SOx	
NOx	
VOC	
CO	
LEAD	

Limited Potential to Emit equivalent to 40 TPY SO <sub>2</sub> 1,860,000 gallons	
BEFORE CONTROLS	AFTER CONTROLS
PM	<b>23.99</b>
PM10	<b>21.36</b>
SOx	<b>39.80</b>
NOx	<b>14.88</b>
VOC	<b>0.93</b>
CO	<b>1.95</b>
LEAD	<b>0.19</b>

\* Emission Factors (from FIRES 5.0) times percent ash or sulfur.

\*\* EF for lead is 26 ppm (from certificate of analysis) times 7.88 lbs/gal times 1000 gallons.

326 IAC 7-4-1.1(a) - 0.3 lbs/MMBtu = 4.5 lbs/hr

Source will be limited to 0.40 % sulfur content to meet 0.3 lbs/Mmtu - record keeping and analysis.

Potential Before Control Furnace #4 burning waste oil	Potential Before Control Furnaces #2 and #6 burning waste oil	Combined Limited Potential to Emit: 1,860,000 gallons to keep the PTE below 40 TPY SO <sub>2</sub> burning waste oil.	after control	Original plantwide limit for waste oil combustion for Furnaces 2 & 6 1,000,000 gallons (page 2)
PM 11.87 TPY	31.65 TPY	PM 1.20 TPY	1.20	
PM10 10.57 TPY	28.19 TPY	PM10 13.70 TPY*	1.07	
SOx 19.70 TPY	52.52 TPY	SOx 39.80 TPY	39.80	
NOx 7.36 TPY	19.64 TPY	NOx 14.88 TPY	14.88	
VOC 0.46 TPY	1.23 TPY	VOC 0.93 TPY	0.93	
CO 0.97 TPY	2.58 TPY	CO 1.95 TPY	1.95	
Lead 0.09 TPY	0.25 TPY	Lead 0.19 TPY	0.010	

\*federally enforceable permit PM10 SIP limits for furnaces 2, 4, and 6



## EMISSIONS CALCULATIONS

## Appendix A - Calculations

## Page 2

**Jupiter Aluminum Corporation**  
1745 - 165th Street  
Hammond, Indiana 46320

PLANT ID NO: T089-5838-00201  
INSP DATE: 2/22/01  
CALC DATE: 9/10/01

original review for  
Furnaces #2 and #6  
completed in 2001.

previous review 2001

Minor Source Modification  
089-15025-00201

CALCULATIONS BY: Ronald Holder

YEAR OF DATA: **review**

Minor Permit Modification  
089-15027-00201

\*\*NOTES\*\*

EF: EMISSION FACTOR  
CE: CONTROL EFFICIENCY

MDR: MAXIMUM DESIGN RATE  
MDC: MAXIMUM DESIGN CAPACITY

Ts: STACK DISCHARGE TEMPERATURE  
UNITS FOR EMISSIONS ARE IN (TPY) EXCEPT WHERE GIVEN

## Waste Oil Use

**Reverb Furnace #2 or #6**  
(Natural Gas Combustion)  
CNTRL DEV: baghouse

MDC (mmBtu/hr): 40  
MDR (mmcf/hr): 0.040  
HEAT CONTENT (Btu/cft): 1000  
QTY BURNED (mmcf/yr): N/A

**Original limit for Furnaces #2 and #6**  
**was 1,000,000 gallons to avoid applicability**  
**to 326 7-1.1-1, 25 TPY SO<sub>2</sub>. (this page)**

This was a comfortable limit assuming the source would not need to use that much. However, the energy savings has been considerable and the source would like to modify Furnace #4 to use waste oil. They understand that record keeping and analysis will be required per 326 7-2-1 and that %S will be limited to meet the emissions limitations of 326 IAC 7-4-1.1 (0.3 lbs/MMBtu).

**The new limit of 40 TPY SO<sub>2</sub> will avoid applicability to 326 IAC 2-3, Emission Offset**

SCC NO. 1-02-006-02			PERMITTED OPERATING HRS: <b>8760</b> hr/yr					
			POTENTIAL EMISSIONS					
			BEFORE CONTROL			AFTER CONTROL		
POLLUTANT	EF(lbs/mmcf)	CE (%)	(lbs/hr)	(lbs/day)	(TPY)	(lbs/hr)	(TPY)	(gr/dscf)
PM	3	0.95	0.120	2.880	<b>0.526</b>	0.006	<b>0.026</b>	N/A
PM10	3	0.95	0.120	2.880	<b>0.526</b>	0.006	<b>0.026</b>	N/A
SOx	0.6	0	0.024	0.576	<b>0.105</b>	0.024	<b>0.105</b>	N/A
NOx	1	0	0.040	0.960	<b>0.175</b>	0.040	<b>0.175</b>	N/A
VOC	5.8	0	0.232	5.568	<b>1.016</b>	0.232	<b>1.016</b>	N/A
CO	20	0	0.800	19.200	<b>3.504</b>	0.800	<b>3.504</b>	N/A
LEAD	0.0005	0.95	0.000	0.000	<b>0.000</b>	0.000	<b>0.000</b>	N/A

NOx emissions negligible because of 100% oxygen supplementation.

**Reverb Furnace #2 or #6**  
(Waste Oil Combustion)  
CNTRL DEV: baghouse

MDC (mmBtu/hr): 20  
MDR (mgal/hr): 0.140  
QTY BURNED (mgal/yr): **1000**  
HEAT CONTENT (Btu/gal): 142,762  
ASH CONTENT (%): 0.403  
SULFUR CONTENT (%): **0.400**

\*\*\* \*\*

waste oil air-atomized burner SCC NO. 1-05-001-13			PERMITTED OPERATING HRS: <b>8760</b> hr/yr					
			POTENTIAL EMISSIONS					
			BEFORE CONTROLS			AFTER CONTROL		
POLLUTANT	EF(lbs/mgal)	CE (%)	(lbs/hr)	(lbs/day)	(TPY)	(lbs/hr)	(TPY)	(gr/dscf)
PM *	25.8	0.95	3.613	86.719	<b>15.826</b>	0.181	<b>0.791</b>	N/A
PM10 *	23.0	0.95	3.218	77.234	<b>14.095</b>	0.161	<b>0.705</b>	N/A
SOx *	42.8	0	5.996	143.904	<b>26.262</b>	<b>5.996</b>	<b>26.262</b>	N/A
NOx	16	0	2.241	53.796	<b>9.818</b>	2.241	<b>9.818</b>	N/A
VOC	1	0	0.140	3.362	<b>0.614</b>	0.140	<b>0.614</b>	N/A
CO	2.1	0	0.294	7.061	<b>1.289</b>	0.294	<b>1.289</b>	N/A
LEAD **	0.205	0.95	0.029	0.689	<b>0.126</b>	0.001	<b>0.006</b>	N/A

Limited Potential to Emit < 25 TPY SO <sub>2</sub> 1,000,000 gallons		
BEFORE CONTROLS	AFTER CONTROLS	
PM	12.90	0.64
PM10	11.49	0.57
SOx	21.40	21.40
NOx	8.00	8.00
VOC	0.50	0.50
CO	1.05	1.05
LEAD	0.10	0.01

\* Emission Factors (from FIRES 5.0) times percent ash or sulfur.

\*\* EF for lead is 26 ppm (from certificate of analysis) times 7.88 lbs/gal times 1000 gallons.

326 IAC 7-4-1.1(a) - 0.3 lbs/MMBtu = 6 lbs/hr

New % sulfur content limitation (0.40 %) to meet 0.3 lbs/Mmtu - record keeping and analysis (see page 1).

Potential Before Control either Furnace burning waste oil	Potential Before Control both Furnaces burning waste oil	Combined Limited Potential to Emit: 1,000,000 gallons to keep the PTE of the modification below 25 TPY SO <sub>x</sub> .	after control
PM 15.83 TPY	31.65 TPY	PM 12.90 TPY	0.64
PM10 14.10 TPY	28.19 TPY	PM10 11.49 TPY*	0.57
SOx 26.26 TPY	52.52 TPY	SOx 21.40 TPY	21.40
NOx 9.82 TPY	19.64 TPY	NOx 8.00 TPY	8.00
VOC 0.61 TPY	1.23 TPY	VOC 0.50 TPY	0.50
CO 1.29 TPY	2.58 TPY	CO 1.05 TPY	1.05
Lead 0.13 TPY	0.25 TPY	Lead 0.10 TPY	0.005

Original plantwide limit  
for waste oil combustion  
for Furnaces 2 & 6  
1,000,000 gallons(this page)

New plantwide limit  
for waste oil combustion  
for Furnaces 2, 4 & 6  
1,860,000 gallons (page 1)

\*federally enforceable permit PM10 SIP limit for 2 and 6.